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No. 1

THE PENNSYLVANIA BOUNTY SYSTEM

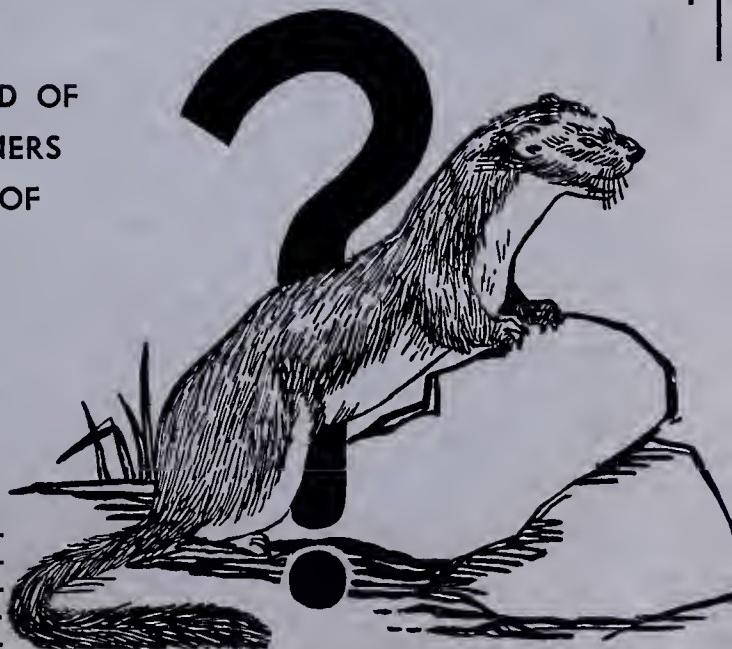
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THE PENNSYLVANIA BOUNTY SYSTEM

A Detailed Study of its History, Operation,
Cost and Effects, together with a Discussion
of the Advisability of its Continuance.

By

RICHARD GERSTELL

Chief of the

Division of Game Research and Distribution

Research Bulletin No. I



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(Left) A fox hide as presented for bounty payment.



(Right) Splitting the face of the skin to prevent duplicate payments.



(Left) The pelt as returned to the claimant.



INTRODUCTION

The control of certain species of birds and mammals commonly classed as predators has for several centuries been considered one of the most important phases of game administration as generally applied both in the United States and in Europe.

The recent trends toward scientific game research and the practical application of management principles derived therefrom have clearly shown that even today extremely little is known either about the many highly complex inter-relationships extant between the innumerable members of both the plant and animal kingdoms or of the development of environmental conditions most favorable to their welfare.

Accordingly, it is as yet impossible to prove that any system of general predator control can properly be included in a sound and comprehensive wildlife management program.

It appears, however, that some form of control must be exercised to a degree under certain conditions, so the problem now confronted is to discover the best and most economical methods to be employed in such work once the need has definitely and quantitatively been proven.

To those interested in wildlife conservation, Pennsylvania's bounty system is well known.

Whether right or wrong, a constant policy regarding the system has for many years been rigidly adhered to within the Commonwealth. It is, therefore, possible by a careful study of the records to discover some of the advantages and disadvantages to be derived from the operation of a state-wide bounty program over a relatively long period.

The purpose of this report is to make known the facts disclosed by a study of the payment of bounties in Pennsylvania, and, by placing particular emphasis on the results obtained during the last twenty years of the system's operation, to discuss the advisability of the continuance of present policies.

HISTORY

In Pennsylvania the payment of bounties for the destruction of certain species of predatory birds and mammals dates back to the year 1683, a period of over two hundred and fifty years.

During these two and one-half centuries, public monies have been constantly paid for the killing of one or more species. At first, payment was made in English currency as the transaction was then a governmental activity carried out by American representatives of the British Crown. The Commonwealth assumed the obligations soon after the signing of the Declaration of Independence and payment in American dollars was made as early as 1802.

From the inauguration of the Pennsylvania bounty system in the latter part of the seventeenth century until the year 1724, rewards were paid only for the killing of wolves. Then red foxes were added to the list. In 1749 squirrels, the ground and flying species excepted, were included in the predator classification and a bounty of three pence was placed upon their heads.

All through the nineteenth century there were constant changes both in the predator classifications and bounty rates as well as in the list of counties offering bounties. The panther appeared on the records in 1807 and the wildcat followed in 1819. The mink was placed on the lists in 1841, while skunks and grey foxes were classed as vermin under the laws of 1868. The famous Pennsylvania "Scalp Act" was instituted in 1885. It provided for the payment of a fifty-cent bounty for the destruction of all species of hawks and owls except the Acadian, screech and barn varieties. In that same year the weasel first appeared on the lists at a premium of fifty cents. The Scalp Act of 1885 was repealed in 1887. Such action is commonly claimed to have been taken because the widespread slaughter of hawks and owls was supposed immediately to have resulted in an overwhelming increase in the population of rats and mice which "wrought untold havoc throughout the State." It appears, however, that repeal was actually induced by the innumerable frauds perpetrated under the Act.

General revisions of the bounty laws occurred in 1889, in 1897, and again in 1907, while legislation enacted in 1913 radically changed the bounty picture.

In that year, the Resident Hunter's License Law was placed in effect. Under the provisions of the act, it became necessary for all gunners, excepting those residing upon or cultivating the soil, to purchase a license to hunt within the Commonwealth. It was stipulated that all fees collected through the sale of such licenses should constitute the Pennsylvania Game Fund which should be separately maintained solely for the purpose of administering the game resources of the State. Furthermore, it was decreed that one-half the sum annually deposited to the credit of the Game Fund should be set aside for the payment of bounties.

The 1913 Law fixed a fifty-cent reward for the destruction of goshawks, sharp-shinned hawks and great horned owls in addition to higher premiums on certain mammals. The County Treasurers, upon the approval of the County Commissioners, paid the bounties based on claims passed by the Justices of the Peace and were later reimbursed from that half of the Game Fund "earmarked" for the purpose.

Widespread and almost unbelievable frauds soon brought about the repeal of the 1913 Bounty Law. It was supplanted by the Act of April 15, 1915, which forms the basis of Pennsylvania's present bounty system.

The Act of 1915 provided that representatives of the Game Commission should be responsible for the payment of bounties and that all expenses incurred thereby should be drawn solely from the Game Fund.

The last mentioned provisions completed the evolutionary history of the bounty system within the Keystone State. Inaugurated chiefly for the protection of personal property, such as poultry and live-stock, the bounty purpose had begun to change shortly after the middle of the nineteenth century, and the legislation of 1885 clearly stated that one of the purposes of payment was the control of predators for the protection of game. While the Act of 1913 provided that one-half the money derived from the sale of hunting

licenses should be set aside for the payment of bounties, the 1915 legislation placed the entire responsibility for bounty payments upon the Game Commission, thus definitely establishing the fact that the present bounty system is solely a game management agency.

The 1915 Act provided for the payment of bounties for the killing within the Commonwealth of the following species at the rates shown: Each wildcat, \$6.00; each red fox, \$2.00; each grey fox, \$2.00; each mink, \$1.00; and each weasel, \$1.00. In 1919 the bounty on wildcats was raised from \$6.00 to \$8.00 and that on weasels from \$1.00 to \$2.00. In 1921 the weasel fee was reduced to \$1.50 and the mink was removed from the bounty list. During 1923 wildcats were raised to \$15.00 and grey foxes to \$4.00, while weasels were further reduced to the original sum of \$1.00. Beginning 1929 the red fox was removed from the bounty list, while a \$5.00 premium was placed on goshawks killed between November 1 and May 1 following. Thus, the present bounty rates have come to be as follows: Each wildcat, \$15.00; each grey fox, \$4.00; each weasel, \$1.00; and each goshawk killed within the prescribed time limits, \$5.00.

Such, in brief, is the history of the Pennsylvania bounty system.

METHOD OF OPERATION

Although the Act of April 15, 1915 forms the basis of the present Pennsylvania bounty system, many of the current details were not finally worked out until several years later. It is, however, not important to know the detailed evolution of the practices now in use, and, accordingly, the following paragraphs will contain only a brief outline of the procedure now in vogue without entering into a discussion of its development.

Any resident of the Commonwealth, or any non-resident being duly possessed of that form of hunting license specially issued to such individuals, may upon killing one or more of the various species of animals carried on the bounty lists, lay claim to and receive bounty payment for the destruction of said animal, or animals, by proceeding along the following lines:

First, the animal, or animals, or its properly skinned hide, or hides, must by the killer be taken before a Justice of the Peace, District Game Protector or other person duly entrusted with the power of administering legal affidavits. Before said officer, and on specially prepared blanks, the killer must make and sign a sworn affidavit stating the number and species of animals presented for bounty payment, the name of the township and county wherein the animal, or animals, was taken and the date of the kill, or kills. To said affidavit the officer administering the oath must affix both his signature and official seal.

The skin, or skins, of the animal, or animals, must then be forwarded together with a properly executed affidavit to the Pennsylvania Game Commission, Bureau of Predatory Animal Control, Harrisburg, Pennsylvania.

Said skin, or skins, in conjunction with the affidavit constitutes a bounty claim. **To fully comprehend the details of this report, the**

fact must be borne in mind that a single bounty claim may cover the killing of one or more specimens of one or more species of animals.

Upon receipt of the claim, employees of the Bureau of Predatory Animal Control thoroughly inspect the same. If all details are in proper order, the hide, or hides, of the animal, or animals, presented is split with a sharp knife from a point midway between the eyes forward and downward through that portion of the skin which originally covered the nasal cartilage, thus removing all possibility of duplicate payment on any hide. The pelt is then returned, postage prepaid, to the claimant, while a check for the amount due is mailed promptly thereafter.

The Game Commission keeps on hand for permanent record all affidavits filed in claim for bounty. These, together with copies of the checks mailed, constitute a complete and accurate set of bounty statistics.

COST

In any detailed consideration of the cost of the Pennsylvania bounty system, it is imperative that the reader thoroughly understand that two types of expenditures are involved.

The first is the actual amount directly expended for bounty payments which is represented by the totals of the checks written.

The second is the administrative expense involved in making the payments, including salaries, wages, postage and other items connected with passage of the claims.

For the sake of clarity, throughout this report the expenditure first mentioned above will be referred to simply as the cost, and the second as the administrative cost.

It will be noted that in most instances total figures herein presented are give in round numbers. This is due to the fact that since an animal may be killed toward the close of one fiscal year and payment on the same may not be made until the beginning of the next fiscal year, it is not always possible annually to check dollar for dollar against each animal killed. Such totals are expressed as the hundred next lowest to the actual figure in question.

I. Totals for Twenty Years

The total cost of the payment of bounties during the twenty-year period from April 15, 1915 through May 31, 1935 was \$1,880,290.00. A breakdown by species showing percentages is as follows:

<i>Species</i>	<i>Total</i>	<i>Percentage</i>
Goshawks (6 years) . . . over	\$ 2,220.00	0.1%
Mink (6 years) "	26,200.00	1.4%
Red Foxes (14 years) . . . "	112,300.00	6.0%
Wildcats (20 years) . . . "	78,300.00	4.2%
Grey Foxes (20 years) . . . "	451,100.00	24.0%
Weasels (20 years) "	1,209,500.00	63.3%
Grand Total	\$1,879,600.00	

The total administrative cost for the same period was approximately \$180,000.00. It is not possible accurately to determine this figure to the dollar because there are in the records many charges shown against the Bureau of Predatory Animal Control which are not directly connected with bounty payments. Among such activities is the live-trapping and redistribution of beavers which had in certain areas become so numerous as to cause excessive property damage. Only those expenditures directly connected with the bounty payments are included in the administrative costs herein listed.

In summation, it will be noted that the total sum expended in the operation of the Pennsylvania bounty system from 1915 through 1935 was approximately \$2,060,290.00. Thus, since the total revenue accredited to the Game Fund during the same period was \$15,449,-700.00, approximately 13% of the Game Commission's operating funds have been expended solely for the payment of bounties.

2. Annual Figures

The average annual cost of bounty payments for the twenty-year period last mentioned was \$94,014.50. The greatest single annual payment was \$128,299.50 in the fiscal year 1933-34, while the lowest was \$47,089.00 paid in 1917-18.

The twenty-year average is most nearly approached by the 1922-23 payment, which totaled \$93,662.00. The 28,545 claims presented that year contained the following species in the number and percentages indicated:

<i>Species</i>	<i>Number</i>	<i>Rate</i>	<i>Total</i>	<i>Percentage</i>
Wildcats	351	\$8.00 each	\$ 2,808.00	3.0%
Red Foxes ..	2,991	2.00 "	5,982.00	6.4%
Grey Foxes ..	4,530	2.00 "	9,060.00	9.7%
Weasels	50,548	1.50 "	75,812.00	80.9%
<hr/>				
Total			\$93,662.00	

The annual average administrative cost from 1915-1935 was approximately \$9,000.00. The figure for the "average" year 1922-23 was \$9,637.60 which may be itemized as below:

Salaries and wages	\$7,345.50
Postage	749.20
Traveling expenses	693.50
All other expenses	849.40
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Total	\$9,637.60

3. Trends

The sum annually expended for the payment of bounties varies greatly from year to year, but by considering the payments made during the twenty-year period from 1915-35 on the basis of the annual average for each of the four five-year periods contained

therein, some insight regarding the cost trends may be gained. The figures in question are as follows:

Period	Annual Average Cost
1915-1920	\$ 68,804.40
1920-1925	102,980.10
1925-1930	99,673.70
1930-1935	104,556.50

At first glance, it appears that following the first five-year period the bounty cost has remained fairly constant, but such is not the case. The true trend of cost during the past twenty years has been that of a general increase, more rapid from 1915-1925 than from 1925-1935. The same would be clearly shown in the figures above if it were not for the fact that during the 1920-1925 period the weasel bounty rate was for one year \$2.00 and for three years \$1.50, while with the exception of six months in 1919, the rate during the entirety of the three periods 1915-1920, 1925-1930 and 1930-35, remained constantly at \$1.00.

The cost figures just presented may be readily visualized from a careful study of the graphs presented in Figure 1.

EFFECTS

Having discussed the history, method of operation and cost of the Pennsylvania bounty system during the twenty-year period from April 15, 1915 through May 31, 1935, the next logical procedure is to study thoroughly the effects thereof.

The bounty system has produced several marked results which have points both good and bad. Each will be fully considered in the following paragraphs in order of importance.

I. As a Control Measure

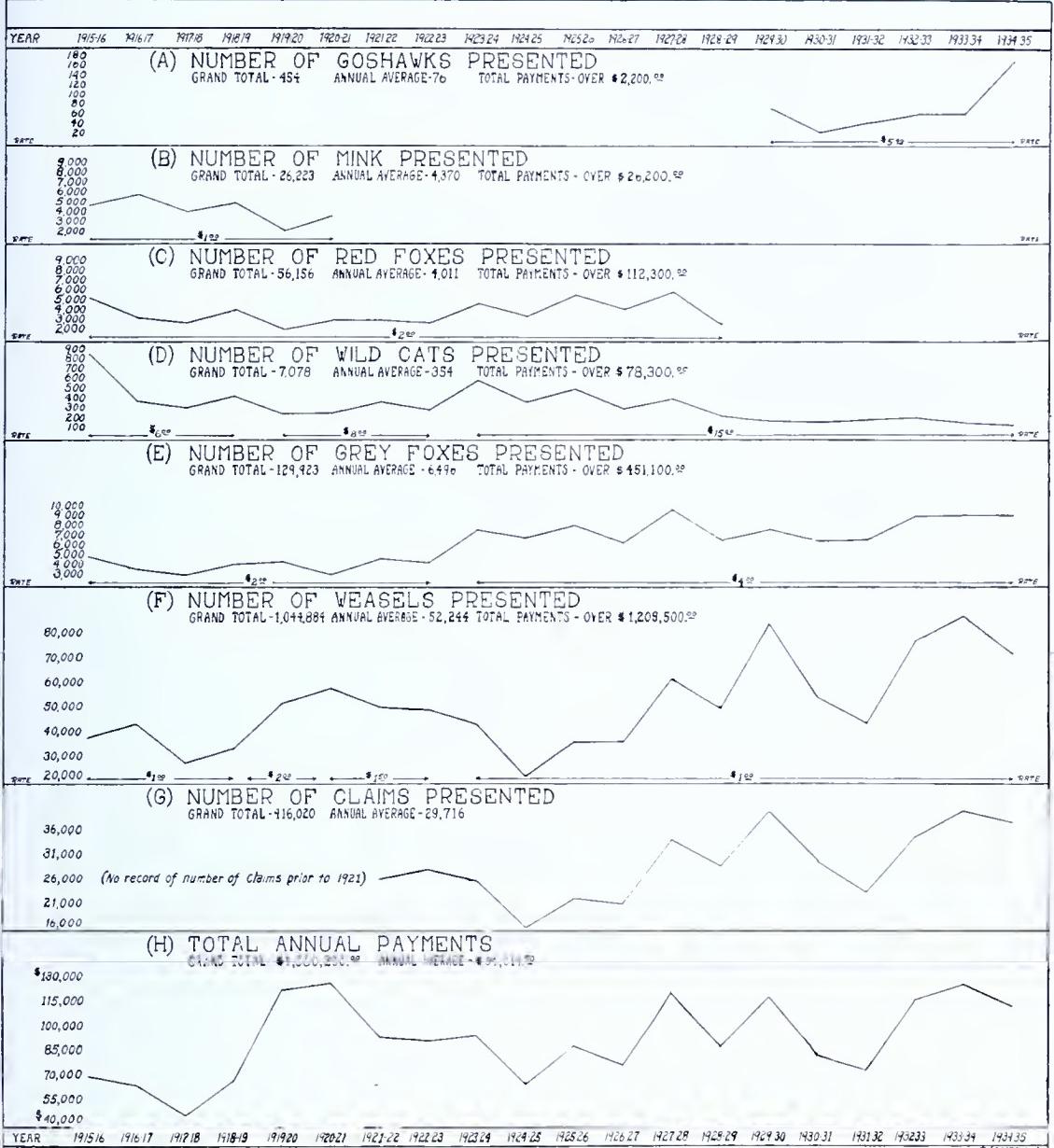
Since the principal purpose for the payment of bounties has during the past twenty years been to control predators for the protection of game, it seems not amiss to discuss first the predator control effected by the bounty system.

Possibly the extent of the control just mentioned may best be seen by making a detailed and separate study of the apparent reactions of each species during that period wherein it has been placed within the predator classifications. Accordingly, this report will be carried forward species by species, and to follow the discussion readily the reader will find it advisable to refer frequently to the graphs contained in Figure 1.

A. On Goshawks. Beginning in 1929, a bounty of \$5.00 was offered for each goshawk killed between November 1st and May 1st following.

Since the species has been on the bounty list a comparatively short time, past records will not give a particularly full picture of the effects of a bounty on the birds, but certain facts are quite evident and of considerable importance.

Section A of Figure I shows the number of goshawks annually presented for bounty payment from 1929-30 through 1934-35. It will be noted that the graph shows no tendency toward any regular



ANNUAL PENNSYLVANIA BOUNTY PAYMENTS

AS RECORDED FROM APRIL 15, 1915 TO MAY 31, 1935

(The figures shown on the chart relate only to monies actually expended for bounty payments. Salaries, wages, postage and other details involved in making the payments required an additional expenditure of approximately \$180,000.00)

(Figure 1)

Figure 1.

graphic curve. A total of 454 animals was presented for payment. The greatest number, 172, was recorded during the fiscal year 1934-35; the smallest, 28, in 1930-31. Other totals were at various points between the two extremes just mentioned and the annual average was 76.

Though not covered in this report, the figures for the fiscal year 1935-36 show that more goshawks were presented for bounty in that one year than in all the six preceding years, the total being 701 birds. The explanation of this phenomenon is quite simple.



Captive goshawk.

Only a very few goshawks breed in Pennsylvania and the scattered pairs annually propagating within the Commonwealth probably do not total one hundred individuals. All nest in the northern counties which represent the southern limit of the species' breeding range. Each winter a relatively small number of birds migrate into the upper section of the State from the extensive breeding grounds farther north. At more or less regular intervals of from eight to fourteen years, however, there occurs during the winter months a major southward migration of goshawks, and in such years unusually large numbers of the birds winter throughout the wooded sections of Pennsylvania, returning again in the spring to the northern breeding grounds. Quite probably the answer to the cause of migration lies in the varying food factors presented by certain cyclic wildlife conditions.

A major southward migration of goshawks occurred during the winter of 1927-28 and many of the birds were observed within the State. Designed to control the damage wrought by the hawks on certain of the game species, the goshawk bounty was instituted in 1929, but in the years immediately following there were no great southward migrations of the species, so the number of birds killed and presented for bounty was small. In the winter of 1935-36, however, a heavy migration took place and the net result of the same was the record payment of that year.

Obviously, the payment of bounty for the destruction of goshawks within the State of Pennsylvania has not, and never will, result in the control of the species even within the Commonwealth. A relatively high bounty in effect during the summer months might well result in almost complete extinction of the resident breeding stock, but the winter migrations would still continue and it is in those years that the goshawks make their greatest inroads on the game populations.

B. On Mink. A bounty for the killing of mink was paid during the first six years of the operation of the bounty system. The rate was \$1.00 per animal and the number of specimens annually presented is shown in Section B, Figure 1.

Examination of the graph will disclose the fact that from 1915 through 1921 bounty fees were paid on 26,223 mink, the annual average being 4,340 animals. The numbers presented varied from year to year with a high of 6,022 in 1916-17 and a low of 2,270 in 1919-20. The irregularity of the curve shows that the bounty probably influenced the killing and control of the mink population to no appreciable degree.

C. On Red Foxes. The red fox was on the bounty list when the present system was inaugurated and the species remained thereon during the fourteen-year period from 1915 through until the end of the fiscal year 1928-29. The reactions of the animal under the bounty payment may be seen in Section C, Figure 1.

A study of the chart will reveal the fact that 56,156 hides were presented in claim for bounty during the fourteen-year period, averaging 4,011 individuals per annum. The rate per animal remained constant at \$2.00 with the largest presentation, 6,046, made in 1927-28, and the lowest, 2,408, in 1919-20. It will be noted that at first the number of foxes presented varied from year to year, but that the general tendency seemed to be toward eventual reduction. The curve levels off starting with the sixth year as if the animals might be held under control, but the series of rises beginning the ninth year and culminating in the peak of 1927-28 again seems to indicate that the species was not controlled by the bounty.

D. On Wildcats. During the one hundred and seventeen year period from 1819 until the present time, the wildcat has almost constantly been included on the Pennsylvania bounty lists.

At the outset of the present system, the premium paid for wildcats was \$6.00 each and during the year 1915-16, 862 cats were presented for payment. The numbers presented during the following two years show a rapid drop followed by a slight rise the fourth year. In spite of a two dollar increase in the rate paid per animal,

the number of presentations again dropped the fifth year and remained fairly constant during the four-year period ending in 1922-23. In 1923, the rate was increased to \$15.00 per head and during 1923-24 there was presented a total of 617 specimens, a peak exceeded only by the record year 1915-16. Through 1927-28 the totals presented varied from year to year, though a tendency toward reduction was again evident. In 1928-29 the presentations reached a low of 278 individuals. The number sank still lower to 190 in 1929-30, and during the following five years remained almost constant, never rising above 211 or below 155, with an average of 184.

The above figures, together with the curve of the graph, clearly indicate that the payment of a relatively high bounty has brought the wildcat under absolute control in Pennsylvania. Furthermore, the all-time low of 97 animals presented in 1935-36 indicates that the animals within the Commonwealth may even be on the verge of temporary or permanent extinction.



The grey fox.

E. On Grey Foxes. Section E, Figure 1, shows in graphic form, the number of grey foxes presented for bounty during the twenty-year period stressed in this report.

The total number of animals presented from 1915-35 was 129,923, giving an annual average of 6,496 individuals. It will be noted, however, that a far greater number of specimens was presented from 1923-35, when the bounty rate per animal was \$4.00, than from 1915-23, when the rate was only half as much. Detailed computation will show that the average number of individuals presented from 1915-16 through 1922-23 was 4,283, with a high of 5,393 and a low of 3,068. On the other hand, the 1923-35 average was 7,999. The high for the period was 9,980, while the low was 6,458 and for

each year the total presented was greater than that of the peak year under the \$2.00 rate. In conclusion, therefore, it may be said that an increase in the bounty rate has increased the number of grey foxes annually presented for bounty payment, but as yet the species shows no evidence of being controlled by the bounty.

F. On Weasels. Since approximately two-thirds of the monies during the last twenty years expended for bounty claims have been paid for the destruction of weasels, it is deemed advisable to study most carefully the extent to which the payments may or may not have controlled this species. Again, the reader is referred to Figure 1, showing in Section F the number of weasels annually presented for payment.

A grand total of 1,044,884 specimens was presented in claim for bounty from April 1915 through May 1935. The annual figures vary widely from year to year, with a peak of 88,578 in 1933-34 and a low of 22,583 in 1924-25. The annual average for the period was 52,244, and it is through a study of annual averages that the general trend of presentations may be learned.

If the twenty-year period under consideration be divided into four equal spans of five years' duration, the annual average figures for the spans are found to be as follows:

<i>Period</i>	<i>Annual Average Presentation</i>
1915-1920	36,816
1920-1925	49,029
1925-1930	54,707
1930-1935	68,423

From the above figures it can be seen that the trend of presentations has been more or less constantly toward a general increase in the annual averages.

The trend toward increase and the number of presentations apparently have not been greatly influenced by the rate of payment. During the first three years under the current system, the rate per animal was \$1.00 and the payments varied appreciably from year to year. In June 1919, the rate was raised to \$2.00 and the number of presentations was increased by approximately 19,000 individuals. One year later, however, the rate was reduced to \$1.50, but the presentation again showed an increase which was approximately 6,000 larger than that received under the \$2.00 rate. In 1923 the original \$1.00 rate was restored, accompanied by a drop to a point approximately 6,000 individuals less than presented under the last year wherein the \$1.50 rate was effective. Under the restored \$1.00 rate, the presentations reached both the record low of 1924-25 and the all-time high of 1933-34.

The general trend toward an ever-increasing annual average has with one notable exception been statewide. This fact may best be seen by examination of the annual average presentation figures for

six groups of three counties each, picked at random from six different sections of the state as shown in the following table.

Group	Annual Average Presentation				
	1915-1920	1920-1925	1925-1930	1930-1935	
1. Northeastern Counties (Luzerne, Pike, Wayne)	1,559	1,968	1,950	2,863	
2. Southeastern Counties (Berks, Chester, Lancaster)	1,824	2,263	2,659	4,579	
3. Northcentral Counties (Bradford, Sullivan, Tioga) .	2,448	2,687	2,377	3,137	
4. Southcentral Counties (Bedford, Blair, York)	2,021	2,388	3,055	3,101	
5. Northwestern Counties (Erie, Crawford, Venango) .	3,490	5,924	5,661	7,374	
6. Southwestern Counties (Allegheny, Greene, Westmoreland)	1,135	1,719	2,236	3,589	



Weasel in summer pelage.

It will be noted in the above series of figures that each group of counties shows a general tendency toward an increased annual average as the years have passed with the exception that the three groups of northern counties all show in the third period a reduction from the second, while the same tendency is not evidenced by the southern groups. It appears, therefore, that at sometime during the 1925-1930 period, some form of natural reduction was suffered by the weasel population throughout the northern-half of the State, but the control effected apparently was readily recovered from even under the stress of a constant bounty program.

While the general tendency toward an increase in the annual average number of weasels presented has been statewide, the fig-

ures just compiled indicate that the increase has been more rapid in the southern counties than in those to the north. By simple computation, it is found that the nine southern counties produced during the 1915-1920 span 39.0% of all presentations; during 1920-1925, 38.8%; during 1925-1930, 44.1%; and during 1930-35, 45.8%.

The two points just mentioned may be clearly seen where the statistics for any two or three counties from the northern and southern half of the State are compared. Also, since the graph presented shows no tendency toward any general decline or state of stability, **it appears that the bounty system has not to any noticeable extent, if at all, controlled the weasel even though two-thirds of the system's cost has been expended in payments on the species.**

A summary of the control effected by the system on each of the species involved would seem to indicate that as a **predator control measure, the payment of bounties has proven generally inefficient as it has placed under control only one relatively small species population, while its effect on five others has been negligible.**

2. As a Protection to Game

Having discussed the effects of the bounty system as a control measure, the next logical step is to proceed with an investigation of its value as a game protection agency because, as already pointed out, the system was instituted to control predators for the protection of game.

At this point, it may be well to call to mind the fact that food-habits research studies are almost constantly giving more and more evidence to discredit the common belief that several species of birds and mammals depend principally on the game species as a source of food supply. Also, the fact that any predatory animal will feed chiefly on those forms naturally included in its diet which are most abundant and most easily obtained during any given period is well established, but to date, cover manipulation as a means of predator control is a field practically untouched.

It is fully realized that at times various of the so-called predators do make appreciable inroads among certain game populations, but to discover the exact extent to which such depredations are carried on and to measure the beneficial effect of controlling the predatory species involved is in most instances a physical impossibility.

If it were possible to determine the exact, or even approximate, numbers of predators killed due to the bounty and for other reasons, and from that figure to compute the population totals for the species in question, it might then be possible to determine the effects of the removal of certain percentages of various predatory species on the related game populations.

The important point, however, is that the numbers of various predators annually presented in claim for bounty do not give a true, accurate, or constant index of the status of the predator populations for the year because the number of animals presented is in addition to current densities also controlled by two additional factors, principally climatic and secondly general economic conditions.

The first step in attempting to discover the extent to which climatic and general economic conditions enter into the presentation

of animals in claim for bounty is to note the claim statistics presented in Section G, Figure 1.

It will be noted that from 1921 through 1935 a total of 416,020 claims for bounty was presented. The number shown varies greatly from year to year, but for the fourteen-year period under consideration, computation proves the annual average to be 29,716. A comparison of the curve presented in Section G with that shown in Section H, representing the amounts of the total annual payments, will reveal the fact that the curves are almost identical, thus indicating that **the average amount of each claim presented is for all years practically constant**. Detailed analysis finds the average for the fourteen-year period to be \$3.16 per claim.

Although the average amount of each claim remains practically constant when consideration is given only to yearly figures, careful computation will reveal that during each year the monthly claims vary widely both in average number and amount, but that the degree of variation during the several months of each year is approximately the same throughout all years. The variables in question may be readily ascertained from the table below:

AVERAGE MONTHLY CLAIM STATISTICS 1925-1930

Month	Average Number of Claims	Percentage of Annual Total	Average Amount of Claims
June	647	2.2%	\$2.60
July	931	3.1%	1.94
August	994	3.3%	1.68
September ..	598	2.0%	1.91
October	680	2.3%	2.42
November ..	2,796	9.0%	2.80
December ..	6,299	21.1%	3.09
January	6,773	22.7%	3.71
February ...	5,424	18.6%	3.79
March	3,527	11.9%	3.99
April	986	3.3%	3.48
May	475	1.5%	2.55

A study of the above table will reveal the fact that over 83% of all bounty claims are presented during the five-month period from November first through the following March. Also, since even casual examination of the skins presented for bounty will show that relatively few of the animals have been taken by means of a gun, and since it is known that the great majority of such specimens are killed during the open gunning season, which usually extends from November 1st through December 15th, the fact remains that the great percentage of animals presented for bounty payment are taken by traps during the winter months.

The claim table just given also will reveal the fact that during the November to March period the average amount of the claims presented is higher than at other times of the year. This is undoubtedly due to the fact that slightly over 86% of all foxes, approximately 88% of all wildcats and practically all goshawks are presented during the months in question when furs are generally prime. Thus, it appears that many of the bounty claimants are interested in both bounties and fur values, but it also is true that

the great majority of claims are weasel claims, pure and simple, because the average amount of each claim is, even during the winter months, appreciably less than the premium paid for the destruction of a single fox, wildcat or goshawk.

From the points just brought out and by simple mathematics, the fact can be determined that well over 80% of the monies expended for bounty payments annually go to persons trapping for fur and bounty during the winter months. In view of this fact, it is logical to suppose that trapping and general economic conditions, which largely determine fur market prices, should play the major roles in regulating the number of bounty claims annually presented and hence the amount of the yearly bounty payments, because the average amount of the separate claims has been shown to be practically constant.

To establish the validity of the supposition just made is not a difficult matter. Since the total amount of the average claim has usually been less than the price per head paid for the destruction of any species other than the weasel and since the majority of the funds spent for the payment of bounties has been expended for the killing of weasels, it would naturally be expected that years most favorable for weasel trapping would produce the greatest number of weasel claims. It is well known that only the more experienced trappers, who are relatively few in number, can with any appreciable degree of success locate and trap weasels when the ground is bare, but, on the other hand, with snow on the ground the presence of the animals is easily detected and, tracked to the vicinity of the den, they readily fall prey even to the novice. Thus, even though the experienced trappers can catch far more foxes during an open winter than one of heavy snow, which would also tend to reduce the number of wildcats trapped by rendering their wilderness haunts practically inaccessible, the presence of snow in average or slightly greater amounts would usually tend to increase greatly the number of weasels presented in claim for bounty and it may, therefore, be logically concluded that vermin trapping conditions are largely controlled by climatic conditions, especially the amount of snowfall.

From the records of the United States Weather Bureau, it is a simple matter to determine the amount of snowfall during each year, and by comparing the bounty claim and payment figures with the snowfall figures, the relationship between the two may be clearly seen. Figure 2 presented herewith shows in graph form the statistics in question for the twenty-one year period from 1915 through 1936. In this instance, as in all other yearly figures contained in this report, each annum is taken on a fiscal year basis beginning June 1 and ending May 31 following, with the exception of the 1915-21 period whereunder the first year runs from April 15, 1915 to November 30, 1916 and other years from December 1 to November 30 following. The figures on inches of snowfall were obtained from the Government Weather Bureau. They are in actuality the figures only for the city of Harrisburg, but they give a figure by meteorologists considered representative of the State as a whole.

Examination of the chart will show that the curve representing the annual amount of snowfall and that representing the amount of the yearly bounty payments are very similar. In general, years

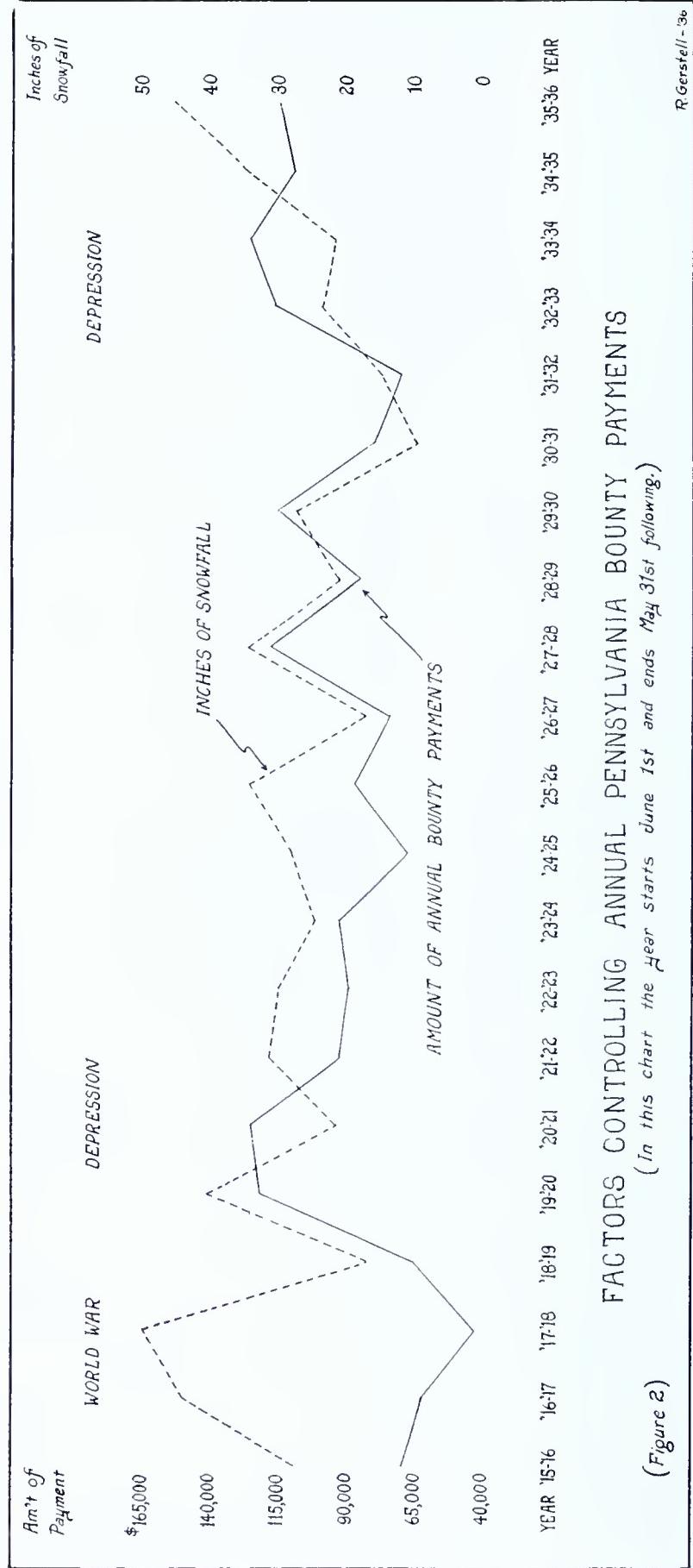


Figure 2.

N.B. The snowfall figures presented were obtained through the courtesy of the United States Weather Bureau. They relate actually only to the city of Harrisburg, but are considered representative of the State as a whole.

of heavy snowfall are accompanied by high bounty payments and, conversely, years of little snowfall show low payments. In many instances the percentage of variation is very nearly equal and there are only three major differences encountered. The first occurs from 1916 through 1918. That, of course, was the period of the World War. Many of the persons who would normally trap were over-seas and all others were employed at high rates of pay. The second difference will be noted in 1920-21, when with approximately 23 inches of snowfall the bounty payments reached a total of \$128,-269.50, a peak only exceeded by the record payment of 1933-34. The year in question was one of general economic depression during which an unusually large number of people depended upon bounty payments to increase their income. The third difference is found in 1933-34, another year of severe economic depression, wherein with approximately 23 inches of snow, the payments reached the all-time high of \$128,981.00. The striking similarity of the 1920-21 and the 1933-34 statistics is almost unbelievable, and it is quite probable that an unusually large number of bounty claims would have been presented in 1930-31 and 1931-32 had not the minimum snowfall during those years made successful trapping practically impossible. Since the three differences just pointed out are accounted for by unusual economic conditions, one a boom and two depression periods, it is only logical to conclude that provided there are reasonable predator populations within the State, the number of animals presented in claim for bounty, and hence the annual amount of payments, will be controlled chiefly by climatic conditions, together with the influence of extreme economic disturbances.

The methods by which general economic conditions influence fur values differ widely and are most difficult to follow in detail, but the fact that the prices do reflect general conditions is obvious. The important point, however, is that, generally speaking, more furs are annually trapped and sold during the better market years than at other times. Thus, we might expect more hides, particularly fox and mink, to be presented in claim for bounty during those years when furs were most valuable than at other times, but such is not the case. During those few years immediately following the World War when fur values were at a peak, it will be noted in Figure I that the number of skins presented in claim for bounty was very low, while in other years when skins were far less valuable, the presentations were much larger.

The logical conclusion arrived at, therefore, is that when fur prices are high the catch of certain of the predatory species is relatively high, but the bounty claim presentations are low probably because the trappers do not feel it worth while to "bother with" presenting the hides for bounty payment prior to their sale.

Inasmuch as the number of predators presented for bounty payment is controlled by climatic and economic conditions, **the annual presentation figures may not be generally taken as indicators of the status of the various predator populations.** It follows, therefore, that it is impossible to correlate the interrelationship extant between the various game and predatory species during any given period by comparing the number of predators presented in claim for bounty with the annual game kill, even though the latter is in most cases directly indicative of the relative abundance of game.

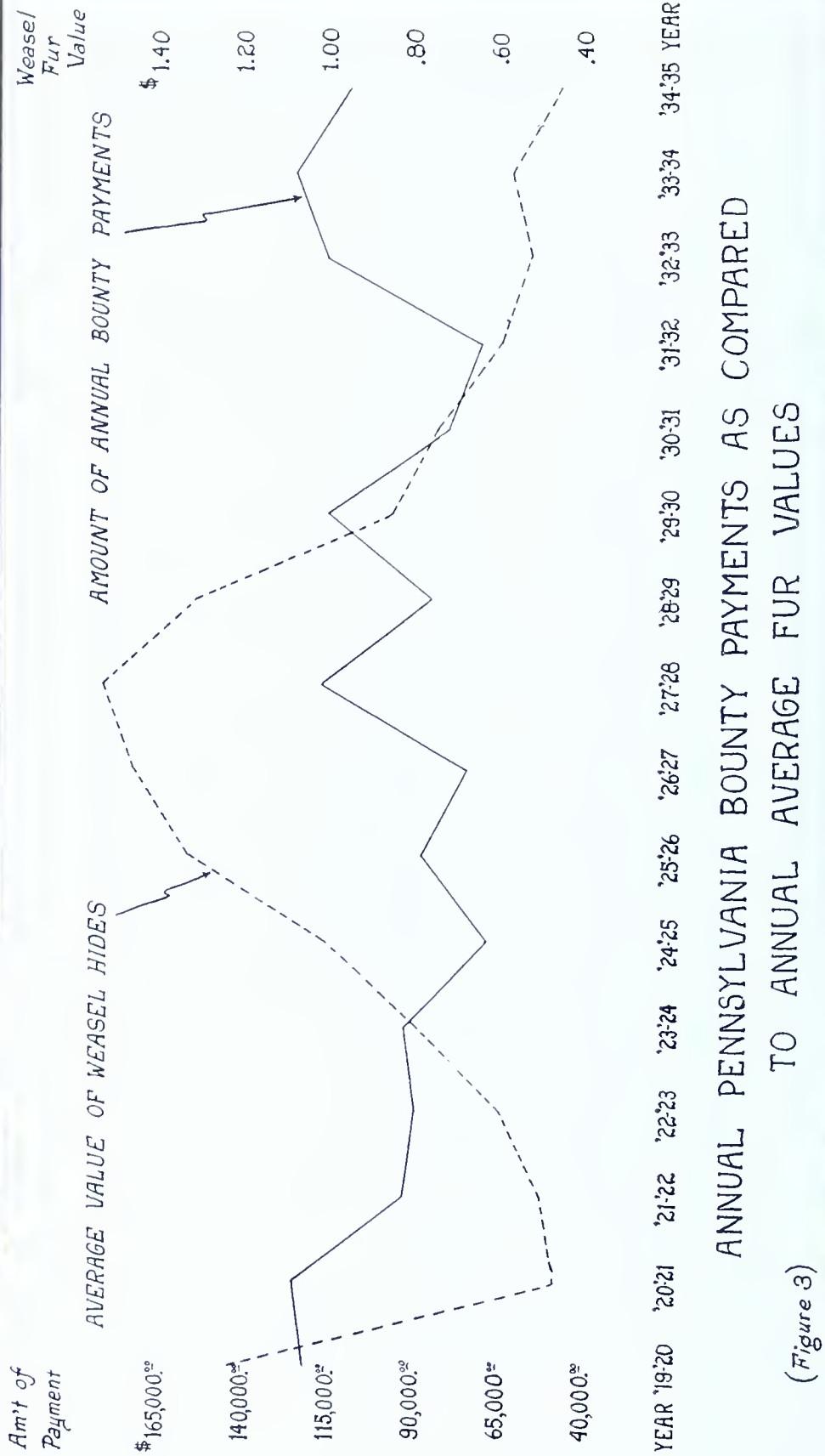


Figure 3.

N.B. The fur value figures presented were obtained through the courtesy of the Dominion Bureau of Statistics and the Hudson's Bay Company Ltd. of Canada. They represent the average price of all pelts marketed in the Dominion and are used because it was impossible to obtain figures from the United States. Through the Canadian figures may be taken as a picture of the price of weasel skins, it is felt that they for Pennsylvania skins, it is felt that they

On the surface, it would appear that in those falls following winters wherein unusually large numbers of predators were presented in claim for bounty, the game kill might well show an appreciable increase to be accounted for by the heavy predator destruction of the preceding winter. In some few instances, cases such as cited above are to be found, but careful study of the records over periods of ten or more years indicate that the same are merely coincidences and it is impossible to show that the predator kill directly affects the game kill.

In conclusion, the fact must be admitted that because it is impossible to show how or to what extent the payment of bounties has influenced the game supply, it is also impossible to prove that the Pennsylvania bounty system has during the past twenty years been of value as a game protective agency even though such may possibly be the case.

3. Economic

The general economic effects of the bounty system are of no small import. The distribution of approximately \$1,880,000.00 in cash over a period of twenty years to thousands of persons living principally in the rural districts has meant much to many farm families and it is upon those very landowners that a large part of the supply of small game must depend for the production of range conditions favorable to its welfare.

Then too, the value of that part of the fur crop taken because of the stimulus offered by the bounty system cannot be overlooked. It is impossible to measure this sum at all accurately, but the annual average figure must amount to thousands of dollars, which also go largely to those persons who own or control the land upon which much of our game is produced.

4. General

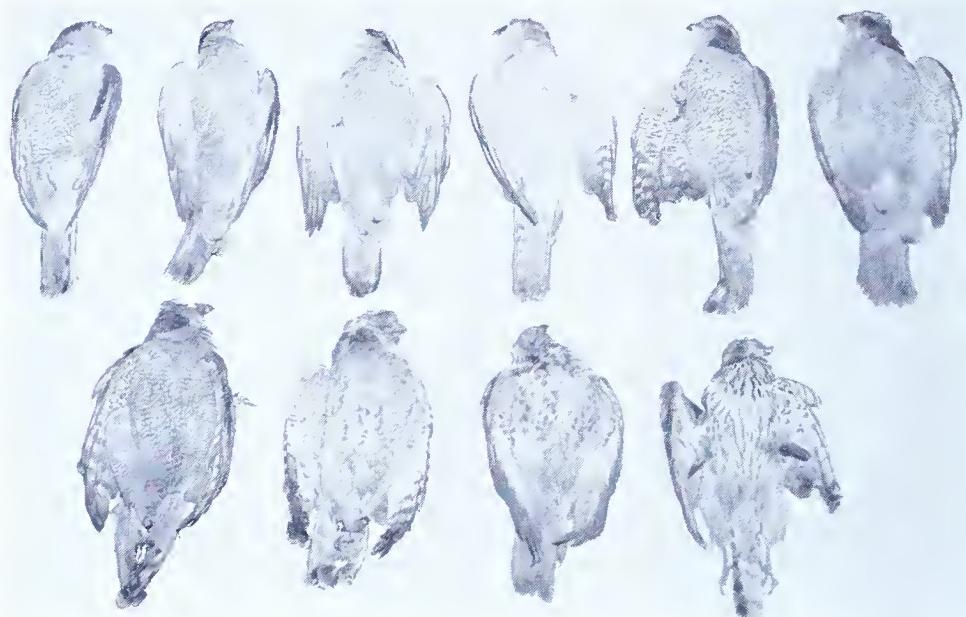
The bounty system has produced several general effects, probably the most important of which has been that of an educational nature. The same may be divided into a number of distinct phases, each of different value.

The first educational effect of the bounty was that direct and pleasant contact necessarily formed between all the scattered bounty claimants and the Game Commission through the payment of the claims presented. By this means, thousands of people in the rural districts soon came to know of the Commission and its work. During the early years of the present system, the contact just mentioned was probably one of the Commission's most valuable means of conservation education, although it has today been supplanted by numerous other instruments.

Secondly, the system has educated the public to the necessity for predator control. Unfortunately, this may prove an ill-directed and misspent activity in which vast amounts of time, money and energy have been wastefully expended, while if instructed in a deeper knowledge of animal ecology, those same forces might have been far more gainfully employed by all concerned.

Thirdly, through the payment of monies for the destruction of goshawks, the system has spread the knowledge and ability of

species identification of the various hawks. This may clearly be seen by the fact that during the first year under the goshawk bounty, over 75% of the birds presented as goshawks were other species, including almost everything from sparrow hawks and screech owls to golden eagles and turkey vultures. Within six years, however, the picture had been completely reversed and the great majority of hawks presented in claim were goshawks, while the remainder were chiefly immature specimens of the larger hawks of appearance somewhat similar to the goshawk.



One day's hawk receipts 1936—eight of them goshawks.

Finally, the system has offered research opportunities of unusual rarity. Through the presentation of hundreds of hawks in claim for bounty, it has been possible to obtain in a relatively short time material for food habit studies which are elsewhere not available. Both the Game Commission and the United States Bureau of Biological Survey have availed themselves of this opportunity to gain appreciable amounts of valuable information. The constant opportunity presented by the bounty for other valuable scientific research, including fur studies, animal distribution, etc., has, however, not been utilized.

In addition to its educational value, the system has to some small degree served as a means whereby the landowners may be compensated for the interest they may have shown in the protection and increase of game through the destruction of predatory species commonly believed to be most detrimental to it.

Along the same lines, the system offers rewards to those persons who deliberately set out to control certain predators for the protection of game. This has served as an inducement for a very limited number of individuals to make a specialty of trapping vermin chiefly for the remuneration afforded by the bounty. Certain of them

operate long trap lines, visited by automobile and otherwise, and their single claims, made at more or less regular intervals, frequently cover the killing of more than fifty weasels or as many as two dozen grey foxes.

On the other hand, a very large percentage of the monies paid for bounty go to claimants who have killed the animals presented for the protection of personal property, or for sport, and not with the idea of protecting game. For example, if any farmer suffers a loss of poultry through a weasel raid, he will make every effort to kill the marauder solely to prevent further losses, but having killed it, he will present the animal in claim for bounty. In many instances, predators sighted in the vicinity of farm buildings are destroyed to prevent property losses even before they occur, but there again the specimens will be presented for payment. Likewise, many persons who are in the field primarily in search of game seize upon unexpected opportunities to kill foxes and even wildcats. These animals are instinctively shot for the thrill of killing and not with the thought of controlling the species for the protection of game, but they are, nevertheless, presented in claim for bounty. Thus, a vast amount of money is constantly being expended for the payment of bounties upon animals which would be killed regardless of whether or not a reward were offered for their destruction. Considering the purpose of the bounty, to control predators for the protection of game, all such payments are needless expenditures.

That the type of claims just mentioned are most numerous is evidenced by the average amount of the claims presented, which has been shown to be \$3.16. This indicates that a large proportion of the claims presented are for one weasel, and since it is known that the great majority of the names contained on the list of persons receiving bounty payments appear only once, or at intervals of many months, it may be concluded that most persons who collect bounties do not make a regular practice of killing predators to protect game, but present claims only when they happen to have made some chance kill during the pursuit of other activities.

The number of individuals presenting claims in the manner just mentioned has, of course, tended to increase as the knowledge of the system of bounty payments has spread and also is greater during period of economic depression than at other times. In all probability, the ever enlarging number of these claims largely accounts for the increasing tendency exhibited by the amount of the average annual bounty payments as heretofore discussed. Also, the fact that many persons who formerly killed animals for the protection of personal property, but never presented them in claim for bounty are now tending to present such animals shows that the number of animals presented in claim for bounty does not necessarily represent the total of the predators killed during any given period.

Naturally, the system has invited attempts to obtain money fraudulently through the filing of illegal claims. While such action resulted in the repeal of several former bounty laws, the present regulations and careful investigation of all claims keep the practice at a minimum and probably very little money is fraudulently collected. A study of the records will show that the officer held responsible for the investigation of bounty claims has during the past five

years been forced to bring in the neighborhood of 77 prosecutions resulting in the collection of approximately \$7,600.00 in penalties and a few jail sentences.

Lastly, the bounty system has proven a stimulus which must have played an important part in the development of the vastly enlarged trapping population now present in the State. Unfortunately, while the payment of bounties increased trapping interest, it did not simultaneously offer any instruction as to the proper methods to be employed in the work, with the ultimate result that appreciable numbers of the various game species have been caught and



Hen pheasant caught in trap set for vermin.

killed in traps improperly set for the express purpose of destroying those forms which are believed to prey extensively on certain game birds and mammals. In this manner, many thousands of cottontail rabbits are annually destroyed by steel traps set in den holes for the purpose of catching weasels. Likewise, many pheasants, a fair number of grouse and occasionally wild turkeys are caught and killed in traps concealed in runways in attempting to catch foxes and wildcats. In this case, the bounty system has in part actually worked against itself through the destruction of those very species which it is designed to protect.

CONTINUANCE

Arguments for and against the continued operation of a bounty system in Pennsylvania are most numerous and very bitterly debated. Some persons feel that the general system now in effect should be maintained and even enlarged by adding more species to

the bounty lists. Others claim that the present policy should be completely abandoned and that the funds now allotted to operating the system should be put to other uses, such as the purchase of game for restocking purposes. In addition, certain individuals believe the Commission should attempt to control the various predatory species by means of a force of paid trappers.

Since the opinions concerning the bounty system are so varied, possibly the best method of approaching the problem at hand is to again proceed with a species by species analysis.

I. On Goshawks

Since, as already shown, the payment of bounties for the destruction of goshawks in Pennsylvania will never result in the control of the species, chiefly because a negligible percentage of the population is resident within the Commonwealth, and because the problem is a seasonal one dependent upon periodic migrations, **it appears most advisable to discontinue the payment of bounties on goshawks at the earliest possible date.**

Even with the bounty removed from the species, it is quite possible that the average annual kill within the State will not be greatly reduced, due to the educational effect of the goshawk payments to date. Examination of the records will show that from 1930-1935 over 64% of all goshawks presented for bounty were killed during the months of November and December, and during the period in question the Pennsylvania small game hunting season usually extended from November 1st to 30th and the big game season from December 1st to 15th, both dates included and all Sundays excepted. Since almost all goshawks are taken with guns and since many of the specimens presented in December had obviously been killed with high-powered rifles, it appears that many of the birds are taken by persons principally in pursuit of game. Thus, having learned to identify the goshawk and having been impressed with an idea of the absolute necessity of its control, it appears that the hunters will continue to kill the goshawks regardless of whether or not a bounty is paid for so doing.

Also, while considering the goshawks, another point is of interest. It is known that goshawks do kill many grouse, but it is not definitely known that the removal of some grouse by the hawks is entirely undesirable. For example, during the winter of 1935-36, there was a heavy southward migration of goshawks. During the same period, the grouse population of the State was at or near the peak in its cycle and the number of birds sent in to Harrisburg for examination after being picked up dead, indicates that some of the grouse were possibly even then succumbing to the effects of the approaching down-swing of the cycle. It is known that many grouse were killed by goshawks, but the **condition** of the birds so taken is unknown. Were they in poor condition and about to succumb to cyclic effects? Did their removal from the flocks tend to retard the devastating effects of the cycle? Such questions cannot now be answered, but they strongly indicate the need for increased amounts of basic game research.

2. On Wildcats

Because the bounty has not only brought the wildcat under complete control, but even placed the species at a point on the verge of extinction, the payment of bounties for the killing of wildcats should be immediately discontinued and serious consideration should be given the thought of offering the species some form of protection. An increase in the wildcat population might well aid in the management of the deer by helping to keep the animals more widely scattered and by removing some of the smaller and weaker individuals from the herds.



A single fox claim presented by a true "bounty trapper."

3. On Grey Foxes

Since the payment of bounties apparently has resulted in no noticeable control of the species, it would seem advisable at least to reduce the grey fox bounty to \$2.00, if not to discontinue it entirely because it is a known fact that many of the animals presented in claim for bounty were taken either for the protection of personal property, for sport, or for fur, and would thus be taken regardless of their status under the bounty laws. Furthermore, when the fox population in certain sections becomes too high, possibly the best procedure is to adopt some localized control measure in the territory rather than to attempt to control the species throughout the State.

4. On Weasels

As the weasel population of the Commonwealth apparently is not controlled by the bounty system, and since it has been shown both that approximately two-thirds of the bounty costs are expended for the destruction of the species and that the rate of bounty pay-

ments has little bearing on the number of animals taken, it appears wise either to reduce the weasel bounty to \$0.50 or to discontinue it for a period of years wherein the effects of such action may be carefully studied.

5. Other Species

It has been shown that the payment of bounties for the destruction of predators apparently results neither in an efficient control of the species involved nor in any general improvement of game conditions. For that reason alone, therefore, it is not deemed advisable to add any species to the present bounty lists even though certain forms may eventually prove more detrimental to game than any of those now listed for bounty payments.

In view of the points just discussed, it appears that one of the wisest steps toward the solution of the present bounty problem would be to have approved legislative action which would give the Board of Game Commissioners the power to control in every detail the bounty regulations to be enforced within the Commonwealth.

Granted the power just mentioned, an immediate adjustment of the present system could be made to fit current conditions and additional changes could be made as the necessities might arise. Also, by variation of the regulations, the results to be obtained from the payment of bounties might better be observed, while a portion of the monies saved through the correction of the present system could be used to carry out basic research designed to determine the exact need for predator control, the extent to which it should be carried out, and the best methods to be employed in the work.

SUMMARY

For the reader's convenience, a summary of the material contained in this report is given below.

1. The history of the Pennsylvania bounty system from its inauguration in 1683 until the present time has been briefly traced.
2. The method of operation of the current system has been outlined.
3. The cost figures for that period from April 15, 1915 through May 31, 1935 have been minutely studied. The total amount of payments during the twenty-year period was found to be \$1,880,290.00, while the administrative cost involved in handling the same approximated \$180,000.00, making the total cost of the operation of the system over \$2,060,000.00. Two-thirds of the payment have been expended for the destruction of weasels and the amount of the average annual payment was \$94,016.50.
4. The effects of the operation of the bounty system have been analyzed in detail and it has been shown that as a predator control measure the payment of bounties has proven grossly inefficient, resulting in the control of only one relatively small species population, namely,

the wildcat. Also, it has been impossible to prove that the operation of the bounty system over a relatively long period of years has improved game conditions. Furthermore, it was shown that the annual amount of money expended for bounty payments was controlled not by the abundance of predators, but principally by climatic and general economic conditions.

5. The advisability of the continuance of the present bounty system has been discussed and it has been concluded that the solution of the current bounty problem lies in the enactment of legislation which will grant the Board of Game Commissioners full regulatory power as regards the payment of bounties. This would make possible immediate correction of certain faults now contained in the system which would effect appreciable savings and make possible the determination of the exact need for predator control and the best methods to be employed therein.

AVAILABLE PUBLICATIONS

The following publications are for free distribution and can be obtained, in single copies, or (for special needs) in reasonable numbers, direct from the Game Commission at Harrisburg:

Bulletin No. 11—More Food for Upland Game.

Leaflet—Use a Flushing Bar.

Mimeo. Booklet—Artificial Incubation and Brooding of Ringneck Pheasants.

Mimeo. Booklet—Hatching and Rearing Ringneck Pheasants.

Biennial Report (1935-1936), every two years.

Pennsylvania Game Law, 1937-1938, every two years.

Summary Game Law, 1937-1938, every two years.

Leaflet—Spending the Sportsman's Dollar.

Leaflet—New Small Game Program Launched.

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By a recent ruling of the Attorney General the following Game Commission publications can be secured only directly from the Bureau of Publications, Division of Documents, Harrisburg, Pa., and not from the Board of Game Commissioners. (Stamps will not be received in payment):

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